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The expression and function of AtLigB homologs from *Beta vulgaris*, *Portulaca grandiflora* and *Mirabilis jalapa*

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ABSTRACT

The phenylpropanoid pathway in plants results in the formation of many subtypes of secondary metabolites that are beneficial to plants and in some cases of utility to humans. Arabidopyrones (APs) are a group of recently discovered metabolites in Arabidopsis, the synthesis of which require the activity of a novel 3' hydroxylase, and the activity of a ring-cleavage dioxygenase (DODA) encoded by AtLigB. LigBs homologs can be found in plant, fungal, and bacterial kingdoms. The role(s) of LigB homologs in plants is not very well understood. The aim of this study is to examine the catalytic efficiency of LigBs from 3 plant species and compare it with AtLigB. Two approaches were used. The first approach is to see if the DODA genes from *Beta vulgaris, Portulaca grandiflora, Mirabilis jalapa* will complement the function(s) of AtLigB in *A. thaliana* by gene cloning and plant transformation. The second approach is to transform the DODA genes in *E. coli* for protein expression and characterization. *B. vulgaris*, *P. grandiflora* and *M. jalapa* were planted and genomic DNA from these three plants has been extracted. The genomic LigB from *B. vulgaris* has been amplified and primers for plant transformation and bacteria expression were designed. From the current results, it is estimated that the size of *B. vulgaris* genomic LigB is about 2.5 kb. For the future, DODA genes will be transformed in Arabidopsis plants and expressed in *E. coli* so that its enzymatic activity can be characterized.

KEYWORDS

arabidopyrones, extradiol dioxygenase, homologous gene

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